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ABSTRACT

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RELATIONSHIPS BETWEEN PEABODY PICTURE VOCABULARY TEST AND STANFORD BINET PERFORMANCE IN YOUNG HANDICAPPED CHILDREN

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ABSTRACT

Analysis of the relationship between the PPVT and SB test age and standard scores of handicapped children of chronological ages 3, 4, 5, and 6 indicated uniform underestimation of SB by PPVT at the lower performance levels. Regression equations for determining SB from PPVT are calculated.

RELATIONSHIPS BETWEEN PEABODY PICTURE VOCABULARY TEST AND STANFORD BINET PERFORMANCE IN YOUNG HANDICAPPED CHILDREN

Recent studies dealing with the relationship between the PPVT and the SB in retarded subjects have revealed moderate correlations, with some variations depending upon intellectual classification of the subjects (Budoff and Purseglove, 1963; Dunn and Brooks, 1960; Dunn and Mottell, 1961; Mein, 1962; Tobias and Gorelick, 1961.). Reports of several authors, however, have indicated a tendency of the PPVT to underestimate the SB scores at lower ability levels (Koh and Madow, 1967; Budoff and Purseglove, 1963). The subjects in the above studies have generally been chronologically older children and adults and a hypothesis for this underestimation has been offered by Koh and Madow (1967). These writers assume that the discrepancy is due to the difference in item content between the two tests. They state that many SB items at the lower MA levels require primarily psychomotor coordination and thus are easier for the retardates than the language items on the PPVT. The rationale apparently is that chronological age contributes more to psychomotor than language functioning.

To date there has been little information in the literature relating PPVT and SB scores in very young handicapped children. Such information would be important in that a finding of equivalence in the two tests for such children would lend credence to the Koh-Madow hypothesis, while a finding of underestimation of SB by PPVT would necessitate a different explanation for such differences than that advanced by these authors, and thus at the least decrease from the generality of the hypothesis. The relationship between these two tests at young age levels is also of interest because of the widespread practice of using the PPVT in preschool programs

both as a short test to general intellectual level and as a measure of language ability in relation to general intellectual level in profile analysis.

Method

Subjects

Subjects were taken from a larger sample of children seen within the past 5 years for psychological testing at the Rhode Island Hospital Child Development Center, a multidisciplinary center for intellectually handicapped children, which services children of all socio-economic levels throughout the state. Subjects included in the study were those within the chronological age categories of 3, 4, 5, and 6 years who achieved PPVT and SB mental age and standard scores within the ranges supplied by the tables of the respective tests, and who had no special sensory or motor difficulties which would invalidate scores on either test.

Procedures

The analysis was done in two stages. In the first stage, the best way to group the data was ascertained. This was done to determine whether it was necessary to retain four separate age groups or if fewer categories could be used. In the second stage correlations between PPVT and SB test ages and standard scores as well as regression equations for the prediction of SB scores from PPVT scores were computed using the age groupings determined in stage 1. Calculations were done with the aid of an IBM 360 computer.

Results

In the first stage the best way to group the data was determined by testing the hypothesis that one regression line can be used for two sets of data (see Ostle, p. 203). At the 95% confidence level it was determined that age groups 3 and 4 could be combined and that age groups 5 and 6 could also be combined. These groupings were for both test ages and standard scores.

Using groupings determined in the first stage, regressions and correlations were computed for test ages and standard scores. Table 1 shows the parameters for each age grouping as well as the differences between the means for each score of each age grouping. It can be seen that the PPVT consistently underestimates the SB. However, inspection of Figure 1 displaying the regression lines, correlations and regression equations reveals the degree of underestimation to be related to the performance level, with low scores underestimating the SB more than the high scores. In fact there was a tendency for high scores in the uppermost ranges of the data to tend to overestimate SB scores, a finding which has been reported previously (Koh and Madow, 1967; Hammill and Irvin, 1967). As an illustration using the 4-year-old age group as an example, the mean PPVT minus SB differences for children scoring within the mental age ranges on the PPVT of less than 3 years (N = 55), 3 to 4 years (N = 26), and over 4 years (N = 7) are -8.33, -8.00, and -.57 months, respectively. Underestimations ranged up to 21 months. Standard score differences at the lower levels were more pronounced than mental age differences.

Discussion

There appears now to be sufficient consistency of findings of underestimation of the SB by PPVT scores at a low performance level to warrant considerable caution in the uses to which PPVT scores of these children are put. Such underestimation has now been found with both chronologically older and younger handicapped children at low performance levels. The fact that an underestimation of SB by PPVT at a low performance level has been found with samples of very young children has theoretical significance in that it casts some doubt on the Koh-Madow hypothesis as a satisfactory explanation of the reason for the observed discrepancy between the two tests. Although it might seem plausible that older retardates would perform

relatively better on tests which include psychomotor tasks than on those with purely language items, there is no reason for expecting this for very young children. Rather, it is suspected that the discrepancies may be due to standardization factors.

The regression equations provided should be of use to those who utilize the PPVT for making inferences regarding general level of intellectual functioning, as well as for those using this test as a measure of receptive language functioning on cognitive functioning profile forms. Taken at face value, PPVT scores of low scoring children would lead to an underestimation of intellectual level in the former case, and to an impression of a receptive language deficit in the latter.

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TABLE 1
Ranges, Means, SD's and Differences between Means of PPVT and SB
TA's and SS's for Combined Age Groups 3 & 4 and 5 & 6

CA	N	PPVT						SB						DIFF.	
		TA			SS			TA			SS			PPVT-SB	
		R	M	SD	R	M	SD	R	M	SD	R	M	SD	TA	SB
3-4	110	21 to 68	33.62	9.10	16 to 119	62.86	22.72	24 to 69	40.77	9.09	47 to 121	78.76	16.44	7.15-15.90	
5-6	61	26 to 78	44.87	12.24	11 to 106	62.57	25.42	30 to 72	49.54	10.37	36 to 110	68.54	17.73	4.67-5.97	

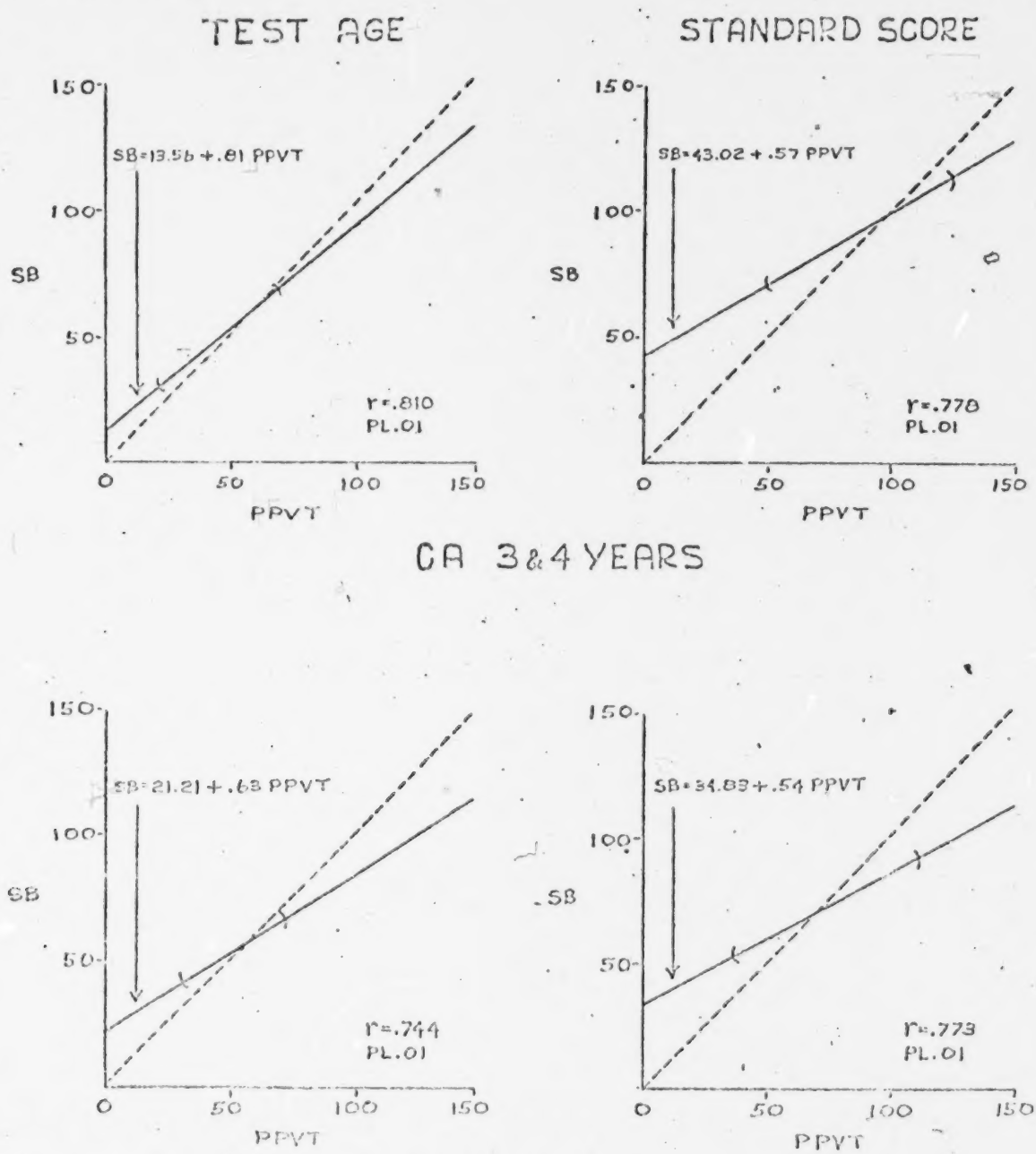

FIG. I

COMBINED SB REGRESSION LINES (SOLID) FOR AGES 3&4 AND 5&6 SHOWING TA AND SS RELATIONSHIPS BETWEEN SB AND PPVT (BROKEN). REGRESSION EQUATIONS, CORRELATION COEFFICIENTS AND SIGNIFICANCE LEVELS ARE ALSO SHOWN. PARENTHESES ON REGRESSION LINES INDICATE RANGES OF ATTAINED SCORES ON SB.